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**APPLICATION**

**FOR**

**UNITED STATES LETTERS PATENT**

**TITLE:** UPLOADING PERSONAL AGENTS TO PERSONALIZE  
NETWORK SERVICES

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UPLOADING PERSONAL AGENTS TO PERSONALIZE NETWORK SERVICES

Background

This invention relates generally to the provision by a network of telecommunication services.

Commonly a network service provider provides a variety of enhanced services to telephone service subscribers. For example, conventional telephone networks may provide a call forwarding function, enabling users to enable or disable the call forwarding function. In addition, network services currently include the ability to set a call forwarding number. Likewise, current network services allow the user to specify call forwarding triggers such as "no answer", "busy", or "always". Similarly, network service providers may allow limited personalization of voice mail and other call services as well.

To receive enhanced network services, the subscriber must accept certain constraints associated with the provision of such services. While network service providers may allow limited personalization, they do not allow more general personalization by their subscribers.

In many cases, users of telephone systems can greatly personalize the way local systems operate. A range of services may be programmed into local PBX systems for example.

Thus, there is a need to enable network service providers to provide personalized services to their subscribers.

Brief Description of the Drawings

5       Figure 1 is a schematic depiction of a network in accordance with one embodiment of the present invention;

      Figure 2 is a flow chart for personal agent software in accordance with one embodiment of the present invention; and

10      Figure 3 is a depiction of network download software in accordance with one embodiment of the present invention.

Detailed Description

Referring to Figure 1, a telecommunications network 10 may be wired or wireless. That is, the network 12 may

15 communicate with subscriber units 14 over a wireless or land line based system 16. In the case of wireless communications 16, the subscriber unit 14 may be a wireless telephone and in the case of a land line system 16, the

subscriber unit 14 may be a conventional land line

20 telephone. The network 12 may provide telephone communication services as well as enhanced services for those subscribers who desire them. In one embodiment, the network 12 may include switching equipment and may be packet-based or circuit switched. In some embodiments, the

25 network 12 is operated by processor-based systems that

include a storage 20 that may store software 10 and 26. In addition, the network 12 may communicate with a database 25.

Referring to Figure 2, the network 12 may receive a  
5 software upload from a subscriber unit 14 to enable personalization of network services. As an example, a subscriber unit 14 may upload personal agent software, in an appropriate format, to enable the network 12 to provide personalized call forwarding services. Unlike  
10 conventionally implemented network call forwarding services, the subscriber may, in fact, provide the software to implement relatively complex functions. The software is then actually executed by a processor-based system associated with the network 12.

15 Other call functions that may be implemented by personal agent software may include call recording, call screening, call logs, voice mail, call waiting or other incoming call handling functions, reporting call charges, directing incoming calls, selecting routes, personalizing  
20 ringers, caller identification, conference calling, and automatic dialing, to provide some additional examples.

Thus, personal agent software 10 provided by the subscriber units 14 may ultimately be stored on the storage 20. A check at diamond 11 determines whether a network  
25 event has occurred. A network event may be one of a plurality of events such as receipt of a telephone call,

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the lack of an answer of an incoming call, the passage of time, or any other network detectable event. When an event occurs, a check at diamond 12 determines whether personal agent software 14 for that event has been installed for the 5 appropriate subscriber. If so, that subscriber's personal agent software is run on the network 12 as indicated in block 18. The personal agent software may call network 12 provided service primitives 20. The service primitives 20 may be software code for implementing common 10 telecommunications functions. In the call forwarding example, the basic function of forwarding calls to another number may be executed by an appropriate primitive 20.

In the event no personal agent for the event has been installed for a particular subscriber, the conventional 15 network event processing is utilized as indicated in block 14 relying on user supplied parameters 16. For example, in keeping with the call forwarding example described previously, the default network event processing may simply forward the call to a particular number specified by the 20 user as a user parameter 16.

Turning next to Figure 3, software 26 for enabling the network to upload the agent software from a subscriber unit 14 begins by downloading information about the available primitives as indicated in block 28 in accordance with one 25 embodiment. This download may simply be a list of the primitives which a particular network service provider

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offers and which may be utilized by uploaded software. A check at diamond 30 determines whether subscriber unit 14 is ready to upload personal agent software. If so, the personal agent may be attached to the appropriate events 5 and stored as indicated in block 32.

Thus, a subscriber unit 14a or 14b may supply personal agent software to the network 12 to implement personalized network originated services. In this way, the subscriber may provide the personalization as desired. The network 12 10 then merely detects the occurrence of events which trigger the provision of personalized services, runs the personal agent software and in some embodiments, provides primitives to implement desired services. However, how those primitives are called, the events that trigger the 15 provision of the primitive services and the way those services are provided may be personalized by the subscriber.

In some cases, the subscriber may actually write the personal agent software. In other cases, the subscriber 20 may purchase available software, using graphical user interfaces or other tools to appropriately personalize the software, and then upload the software to the network 12. The provision of the personal agent software may be over the appropriate network connections 16 or may be by way of 25 an auxiliary connection. For example, in connection with a telephone network, the providing of the personal agent

software may be done over a computer network such as a local area network, a metropolitan area network or the Internet. For example, in one embodiment, a subscriber may access the network provider's web site and may simply

5 provide the agent software through that web site. Alternatively the software may be uploaded over the communication network 12 itself.

While the present invention has been described with respect to a limited number of embodiments, those skilled 10 in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is: